

WHAT IS CLAIMED IS:

1. A method for the production of completely male sterile plants of the genus *Lolium*, comprising:
 - a) mutagenizing caryopses material of wild-type plants of the genus *Lolium*; and
 - b) identifying at least one completely male sterile *Lolium* plant.
2. The method of Claim 1, further comprising examining the mutagenized *Lolium* plants by at least one test method.
3. The method of Claim 2, wherein the test method is selected from the group consisting of a method directed to pollen vitality and and a molecular biological method.
4. The method according to claim 1, wherein the mutagenesis is performed by addition of a chemical mutagen.
5. The method according to claim 4, wherein said chemical mutagen is N-ethyl urea.
6. The method according to claim 1, wherein the *Lolium* plants are selected from the group consisting of *Lolium perenne*, *Lolium multiflorum* and *Lolium hybridum*.
7. The method according to claim 3, wherein the test method directed to pollen vitality comprises a staining method.
8. The method according to claim 7, wherein the staining method is selected from the group consisting of the method according to Alexander, the addition of light green reagent, and the addition of Lugol's solution.
9. The method according to claim 3, wherein the molecular biological method for examining the mutagenized *Lolium* plants comprises a Southern Blot technique.
10. The method according to claim 9, wherein the method employs primer pairs for amplification of probes used for Southern Blot hybridization, wherein the primer pairs are selected from the group consisting of the following primer pairs:
 - a) TTACTTCACATAGCTTTTCGTU (SEQ ID NO. 1)
CCACAAACCACAAGGATATAG (SEQ ID NO. 2)
 - b) ATGATTGAATCTCAGAGGCAT (SEQ ID NO. 5)
CATATACCTCCCCACCAATAG (SEQ ID NO. 6)

- c) TTAGTAGATCGTGAGTGGGTC (SEQ ID NO. 7)
GTGCTAAAAATCCGGTACAT (SEQ ID NO. 8)
- d) TTATCCGTCGCTACGCTGTTC (SEQ ID NO. 9)
AATGGAAAGATCGGAACATGG (SEQ ID NO. 10)
- e) ATGACTATAAGGAACCAACGA (SEQ ID NO. 17)
GATCAGTCTCATCCGTGTAA (SEQ ID NO. 18)
- f) ATGAGACGACTTTTTCTTGAA (SEQ ID NO. 19)
CTTGTAATACTAATCGAGACCG (SEQ ID NO. 20),

further wherein the sequences are shown in 5'-3' direction and further wherein the first sequence is the upper primer and further wherein the probes generated by amplification with the primers are used for Southern Blot analysis in one of the following combinations with restriction enzymes:

- a) together with *Hind*III or *Dra*I
- b) together with *Hind*III, *Dra*I or *Eco*RV
- c) together with *Hind*III or *Bam*HI
- d) together with *Hind*III, *Xba*I, *Dra*I, *Eco*RV, *Bam*HI or *Hae*III
- e) together with *Xba*I or *Hae*III
- f) together with *Eco*RV.

11. A method for the production of stable F₁ hybrids of completely male sterile plants of the genus *Lolium*, comprising:

- a) producing a completely male sterile plant of the genus *Lolium* (MSL plants) according to the method claim 1, and
- b) back-crossing the MSL plant obtained in step a) with one or more plants of the genus *Lolium*, which have normal fertile cytoplasm and which maintain the sterility of the MSL plants (maintainer plants).

12. The method of Claim 11, further comprising examining the mutagenized *Lolium* plant by at least one test method selected from the group consisting of a method directed to pollen vitality and a molecular biological method.

13. The method according to claim 11, wherein the back-crossing leads to a 100% pollen-sterile progeny.

14. The method according to claim 11, wherein a multiple back-crossing with maintainer plants is performed.

15. The method according to Claim 11, wherein a sterility-inducing plasm of the MSL plant produced in step a) is brought to a tetraploid valence by polyploidization.

16. The method according to claim 15, wherein the polyploidization is achieved by treatment with colchicine.

17. Plants of the genus *Lolium* with complete male sterility, produced according to the method of claim 11.

18. A method for the production of hybrids with pollinator plants having normal male fertility, using the completely male sterile plants of the genus *Lolium* according to claim 16.

19. A hybrid seed produced by the method of claim 11.

20. A hybrid seed produced by the method of claim 12.